

Date: Tuesday, 12/18/2007 10:45:42 AM
User: Kim Johnston

Process Sheet

Customer	CU-DAR001	Dart Helicopters Services	Drawing Name	Mounting Bracket
Job Number	36395			
Estimate Number	11796			
P.O. Number	:		Part Number	D2523
This Issue	12/18/2007	S.O. No. :	Drawing Number	D2523 REV A2
Prsht Rev.	NC		Project Number	N/A
First Issue	/ /	Type : MACHINED PARTS	Drawing Revision	A2
Previous Run	33047		Material	:
Written By	:	<i>10/12/18</i>	Due Date	1/7/2008
Checked & Approved By	:		Qty:	20
Comment	Est. C	01.04.16 Re format, added DT8560 EC	Um:	Each

Additional Product

Job Number:



Seq. #: Machine Or Operation:

Description:

1.0 M6061T6B1000X12000

6061-T6 Bar 1.0" x 12.0"



Comment: Qty.: 1.9031 f(s)/Unit Total : 38.0625 f(s)

6061-T6 Bar 1.0" x 12.0"

Material: 6061-T6 (QQ-A-200/8) 1.00" thick

Note: 2 per blank.

Batch *M104/719**11.4186 f(s)**M106701 -> 26.6434 f(s)*

2.0 BAND SAW

BAND SAW

BAND SAW



Comment: BAND SAW

Cut blank: 21.75" x 12.00"

*(10)**DSP 08/01/05*

3.0 HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: HAAS CNC VERTICAL MACHINING #1

Machine as per folio D2523

*(22)**PTO**DSP 08/01/06*

4.0 QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

*DSP 08/01/10**(22)*

5.0 QC8

SECOND CHECK



Comment: SECOND CHECK

*Bf 08-01-11**(22)*

6.0 SMALL FAB 1

SMALL & MEDIUM FAB RESOURCE 1



Comment: SMALL & MEDIUM FAB RESOURCE 1

Deburr

Drill holes as per dwg D2523 using DT8560

*Ff 08-01-16**(22)*

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D2523 PAR #: JA Fault Category: Prosmact NCR: Yes No DQA: LH Date: 08.01.25
 QA: N/C Closed: LH Date: 08.01.28

NCR: 36395		WORK ORDER NON-CONFORMANCE (NCR)							
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector	
			Initial Chief Eng	Action Description Chief Eng	Sign & Date				
08/01/07	3.0	2 first parts, 1/2" Rougher pulled out of the holder/collect	JL 08/01/07	Reassemble tool int/holder/collect. ensure tool is secure. Scrup. destroy & replace Qty 2 B 106701	DSP 08/01/07	JL 08/01/08	JL 05/04/02	JL 07/01/02	
08/01/07	3.0	2 parts have the dim. of 0.125" (lower thickness of 0.103" PC mat. thickness)	UE 08.01.09	Acceptable. See attached calculation.	JL 08/01/09	JL 09/01/10	UE 08.01.09	✓ 08/01/10	

NOTE: Date & initial all entries

Date: Tuesday, 12/18/2007 10:45:42 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services		Drawing Name: MOUNTING BRACKET	#15	30 m
Job Number: 36395		Part Number: D2523	23/01/2008	
Job Number:			S.00001	07.56
Seq. #:	Machine Or Operation:	Description :	#1	328.3 F
7.0	QC5	INSPECT WORK TO CURRENT STEP	#2	324.9 F
			B36395	
Comment: INSPECT WORK TO CURRENT STEP		5 08/01/16	30 m	23/01/2008
8.0	HAND FINISHING1	HAND FINISHING RESOURCE #1	#16	08.23
				S.00001
Comment: HAND FINISHING RESOURCE #1		41 08-01-7	30 m	23/01/2008
Chemical Conversion Coat as per QSI 005 4.1			09.00	
9.0	POWDER COATING	TICKET #15/16 POWDER COATING M 106379	S.00002	(22)
				08-01-23
Comment: POWDER COATING		BL 08-01-23	(22X)	
Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3				
10.0	QC3	INSPECT POWDER COAT/CHEMICAL CONVERSION		08/01/23
Comment: INSPECT POWDER COAT/CHEMICAL CONVERSIÓN		77-1		
11.0	PACKAGING 1	PACKAGING RESOURCE #1		
Comment: PACKAGING RESOURCE #1				
Identify and Stock				
Location: ST197			(22)	
12.0	QC21	FINAL INSPECTION/W/O RELEASE		08.01.25
Comment: FINAL INSPECTION/W/O RELEASE				
Job Completion		2008/1/24		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	36395
Description: Mounting Bracket	Part Number:	D2523
Inspection Dwg: D2523	Rev: A2	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

Measured by:	DSP
Date:	08/01/07

Audited by:	<i>gml</i>
Date:	08/01/07

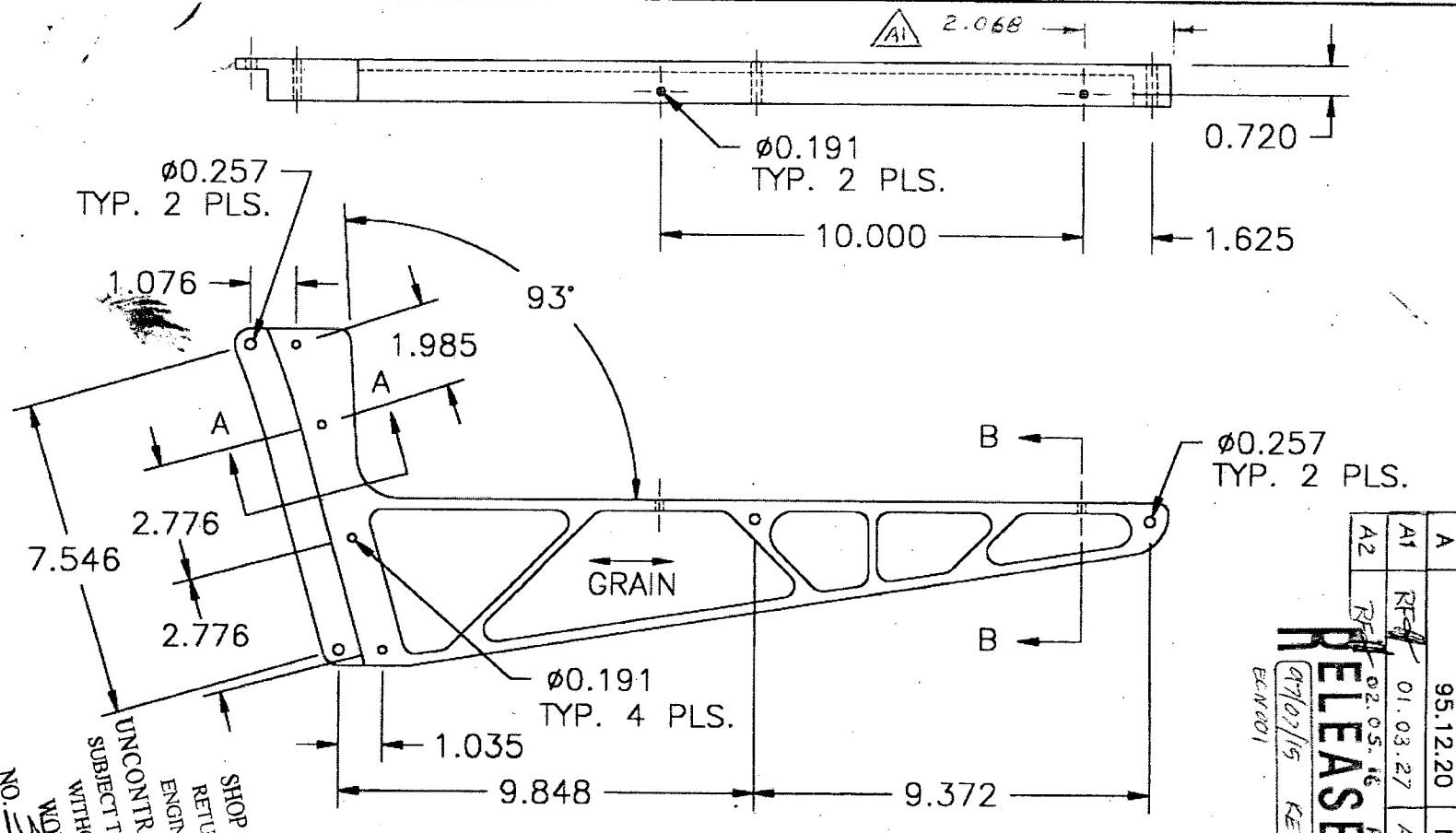
Prototype Approval:	N/A
Date:	N/A

Rev	Date	Change	Revised by	Approved
A	05.02.17	New Issue	KJ/JLM <i>[Signature]</i>	JULI <i>[Signature]</i>

DART

DESIGN B-2	DRAWN BY <i>KE</i>	DART AEROSPACE LTD VICTORIA INTERNATIONAL AIRPORT, CANADA
CHECKED <i>JK</i>	APPROVED <i>JK</i>	DRAWING NO. D2523
DATE 95.12.20	TITLE MOUNTING BRACKET	REV. A SHEET 1 OF 1
SCALE 1:4		

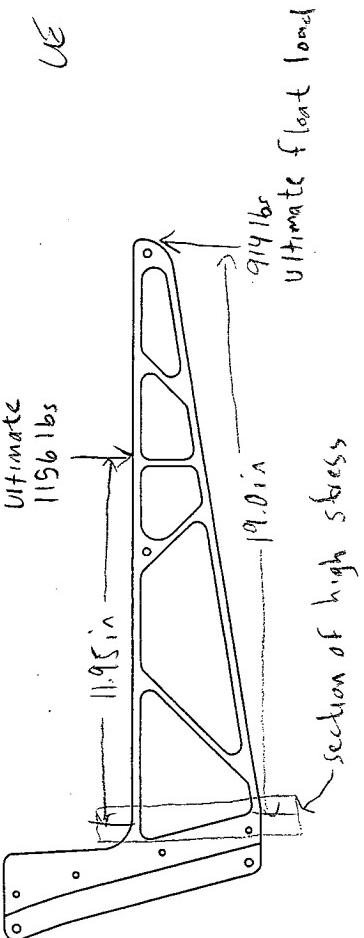
RELEASED
97/07/15 KE
E.C.W.01



WORK ORDER
NO. 36395

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE

UE 08.01.07



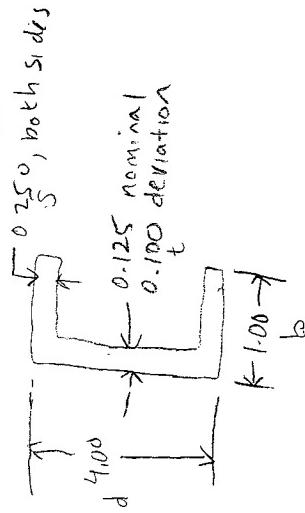
Moments:

$$M_1 = (1156 \text{ lbs})(11.95 \text{ in}) = 13814 \text{ in-lbs}$$

$$M_2 = (914 \text{ lbs})(19.0 \text{ in}) = 17366 \text{ in-lbs}$$

use higher stress in calculation \therefore use M_2 .

Cross-Section:



$$\sigma = \frac{M c}{I}$$

$$\begin{aligned} I &= \frac{bd^3 - h^3(b-t)}{12} & h &= d - 2(t) \\ &= 4.0 - 2(0.125) \\ &= 3.5 \text{ in} \end{aligned}$$

I_n = moment of inertia, nominal dim

I_d = moment of inertia, deviation

$$I_n = \frac{(1.0)(4.0)^3 - (3.5)^3(1-0.125)}{12}$$

$$I_n = 2.207 \text{ in}^4$$

$$I_d = \frac{(1.0)(4.0)^3 - (3.5)^3(1-0.100)}{12}$$

$$I_d = 2.118 \text{ in}^4$$

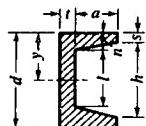
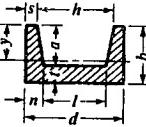
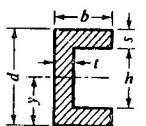
$$\sigma_n = \frac{M_2 c}{I_n} = \frac{(17366 \text{ in-lbs})(2.0 \text{ in})}{2.207 \text{ in}^4} = 15737 \text{ psi}$$

$$\sigma_d = \frac{M_2 c}{I_d} = \frac{(17366 \text{ in-lbs})(2.0 \text{ in})}{2.118 \text{ in}^4} = 16370 \text{ psi}$$

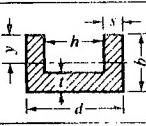
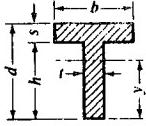
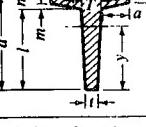
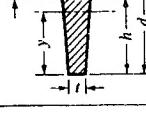
Max stress is 42000 psi (ultimate) of 6061-T6

Margin of safety = $\frac{\sigma_{max}}{\sigma_d} - 1 = 1.57 \therefore$ deviation is acceptable

Moments of Inertia, Section Moduli, and Radii of Gyration (Continued)

Section	Area of Section, A	Distance from Neutral Axis to Extreme Fiber, y	Moment of Inertia, I	Section Modulus, $Z = I/y$	Radius of Gyration, $k = \sqrt{I/A}$
C-Sections					
	$dt + a(s+n)$	$\frac{d}{2}$	$\frac{1}{12} \left[bd^3 - \frac{1}{8g} (h^4 - l^4) \right]$ $g = \text{slope of flange} = \frac{h-l}{2(b-t)} = \frac{h}{b}$ for standard channels.	$\frac{1}{6d} \left[bd^3 - \frac{1}{8g} (h^4 - l^4) \right]$	$\sqrt{\frac{\frac{1}{12} \left[bd^3 - \frac{1}{8g} (h^4 - l^4) \right]}{dt + a(s+n)}}$
	$dt + 2a(s+n)$	$b - \left[\frac{b^2 s + h t^2}{2} + \frac{g}{3} (b-t)^2 \times (b+2t) \right] + A$ $g = \text{slope of flange} = \frac{h-l}{2(b-t)} = \frac{h}{b}$ for standard channels.	$\frac{1}{3} \left[2s b^3 + l t^3 + \frac{g}{2} (b^4 - l^4) \right] - A(b-y)^2$	$\frac{l}{y}$	$\sqrt{\frac{l}{A}}$
	$bd - h(b-t)$	$\frac{d}{2}$	$\frac{bd^3 - h^3(b-t)}{12}$	$\frac{bd^3 - h^3(b-t)}{6d}$	$\sqrt{\frac{bd^3 - h^3(b-t)}{12[bd - h(b-t)]}}$

Moments of Inertia, Section Moduli, and Radii of Gyration (Continued)

Section	Area of Section, A	Distance from Neutral Axis to Extreme Fiber, y	Moment of Inertia, I	Section Modulus, $Z = I/y$	Radius of Gyration, $k = \sqrt{I/A}$
T-Sections					
	$bd - h(b-t)$	$b - \frac{2b^2 s + h t^2}{2bd - 2h(b-t)}$	$\frac{2b^3 s + h t^3}{3} - A(b-y)^2$	$\frac{l}{y}$	$\sqrt{\frac{l}{A}}$
	$bs + ht$	$d - \frac{d^2 t + s^2(b-t)}{2(bs+ht)}$	$\frac{1}{3} [ty^3 + b(d-y)^3 - (b-t)(d-y-s)^3]$	$\frac{l}{y}$	$\sqrt{\frac{\frac{1}{3}(bs+ht)[ty^3 + b(d-y)^3]}{-(b-t)(d-y-s)^3}}$
	$\frac{l(T+t)}{2} + Tu + a(s+n)$	$d - \frac{3s^2(b-T)}{2} + 2am(m+3s) + 3Td^2 - l(T-t)(3d-l) + 6A$	$\frac{1}{3} [l^3(T+3t) + 4bu^3 - 2am^3] - A(d-y-n)^2$	$\frac{l}{y}$	$\sqrt{\frac{l}{A}}$
	$bs + \frac{h(T+t)}{2}$	$d - [3bs^2 + 3ht(d+s) + h(T-t)(h+3s)] / 6A$	$\frac{1}{3} [4bs^3 + h^3(3t+T)] - A(d-y-s)^2$	$\frac{l}{y}$	$\sqrt{\frac{l}{A}}$

